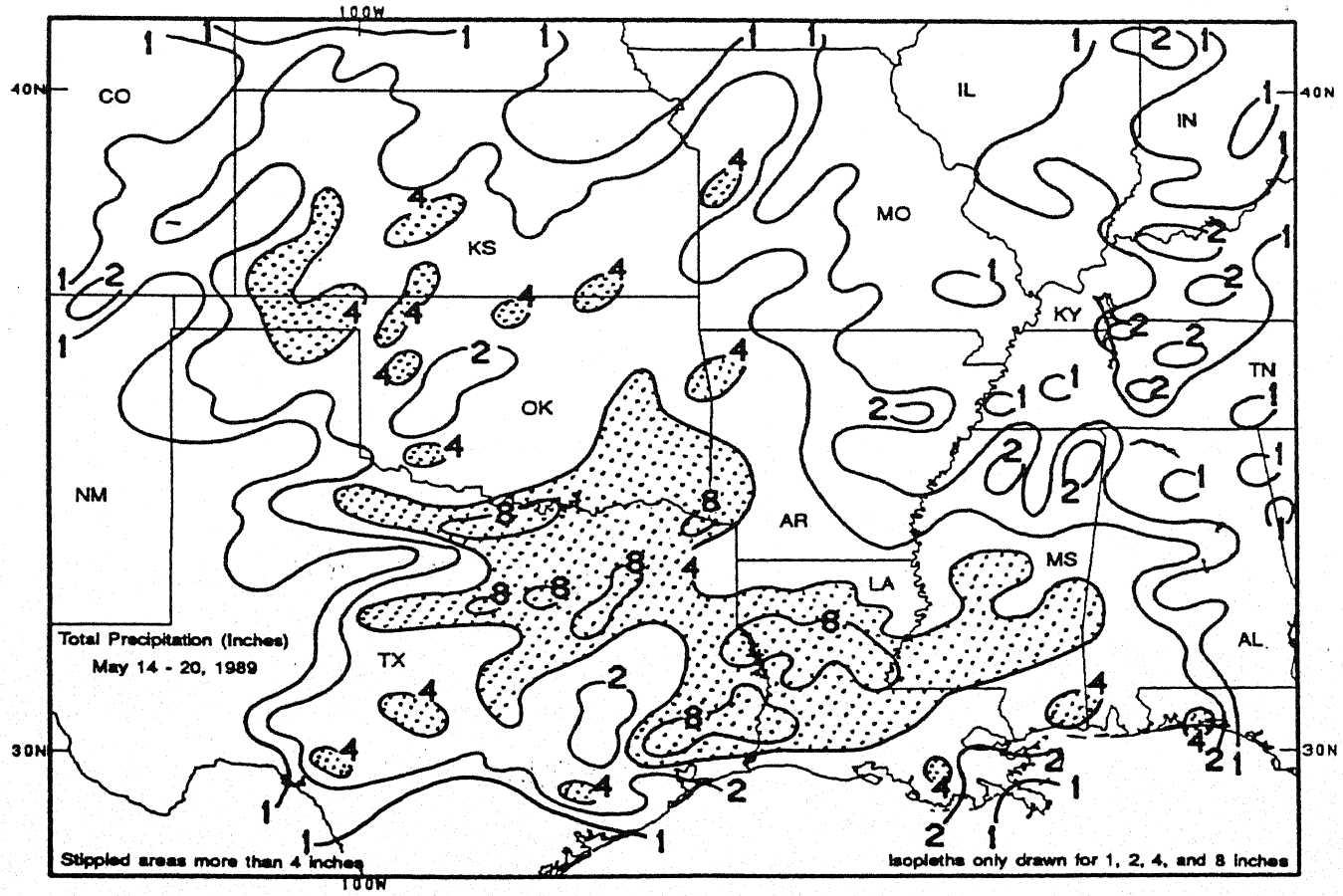
CLIMATE ANALYSIS CENTER

WEEKLY CLIMATE BULLETIN

No. 89/20 Washington, DC May 20, 1989



STRONG THUNDERSTORMS INUNDATED PORTIONS OF THE SOUTHERN GREAT PLAINS AND LOWER MISSISSIPPI VALLEY AS TORRENTIAL DOWNPOURS (UP TO 17.7 INCHES) CAUSED SEVERE FLOODING ACROSS PARTS OF NORTH-CENTRAL AND SOUTHEASTERN TEXAS AND WESTERN LOUISIANA. FARTHER NORTH, HOWEVER, THE THUNDERSTORMS BROUGHT WELCOME RAINS TO MOST OF KANSAS, NEBRASKA, AND WESTERN MISSOURI AND TO SECTIONS OF THE CORN BELT.

UNITED STATES DEPARTMENT OF COMMERCE

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

NATIONAL WEATHER SERVICE - NATIONAL METEOROLOGICAL CENTER

WEEKLY CLIMATE BULLETIN

This Bulletin is issued weekly by the Climate Analysis Center and is designed to indicate, in a brief, concise format, current surface climatic conditions in the United States and around the world. The Bulletin contains:

- Highlights of major climatic events and anomalies.
- U.S. climatic conditions for the previous week.
- U.S. apparent temperatures (summer) or wind chill (winter).
- Global two-week temperature anomalies.
- Global four-week precipitation anomalies.
- Global monthly temperature and precipitation anomalies.
- Global three-month precipitation anomalies (once a month).
- Global twelve-month precipitation anomalies (every 3 months).
- Global three month temperature anomalies for winter and summer seasons.
- Special climate summaries, explanations, etc. (as appropriate).

Most analyses contained in this Bulletin are based on preliminary, unchecked data received at the Center via the Global Telecommunication System. Similar analyses based on final, checked data are likely to differ to some extent from those presented here.

STAFF

Editor:	David M. Miskus
Associate Editor:	Paul Sabol
Contributors:	Jeffrey D. Logan
	Keith W. Johnson
	Vernon L. Patterson
	Richard J. Tinker
Graphics:	Robert H. Churchill
	Michael C. Falciani

*To receive copies of the **Bulletin** or to change mailing address, write to:*

Climate Analysis Center, **W/NMC53**
Attn: WEEKLY CLIMATE BULLETIN
NOAA, National Weather Service
Washington, DC 20233

For CHANGE OF ADDRESS please include your old mailing label.

Phone: (301) 763-8071

WEEKLY CLIMATE BULLETIN REQUEST

☐ Please **ADD** my address to your mailing list.
☐ Please **CHANGE** my address on your mailing list.
☐ Please **DROP** my address from your mailing list.

Name _____

Organization _____

Address _____

City _____ State _____ Zip _____

GLOBAL CLIMATE HIGHLIGHTS

MAJOR CLIMATIC EVENTS AND ANOMALIES AS OF MAY 20, 1989

1. Coastal sections of British Columbia and Alaska:

MORE DRY WEATHER.

Little or no precipitation fell as very dry conditions persisted [13 weeks].

2. Central United States and South Central Canada:

RAINS BRING SOME RELIEF.

Up to 254 mm of precipitation occurred at some stations and brought welcome relief; however, other stations measured very light precipitation amounts (See U.S. Weekly Climate Highlights) [9 weeks].

3. Eastern United States:

RAINS CONTINUE; COLD EASES.

As much as 122 mm of rain fell at many locations [3 weeks]. Temperatures moderated to near or slightly above normal (See U.S. Weekly Climate Highlights) [Ended at 3 weeks].

4. Louisiana and Eastern Texas:

TORRENTIAL RAINS OCCUR.

Severe flooding associated with very heavy showers and thunderstorms (up to 450 mm) was reported in parts of Louisiana and the eastern half of Texas (See U.S. Weekly Climate Highlights) [Episodic Event].

5. Argentina and Uruguay:

HEAVY SHOWERS REPORTED.

Up to 73 mm precipitation fell at some stations of Argentina; however, long- term deficits remained [Ending at 47 weeks].

6. Turkey:

STILL DRY.

Little or no precipitation fell in southeastern Turkey as very dry weather continued [10 weeks].

7. Eastern Asia:

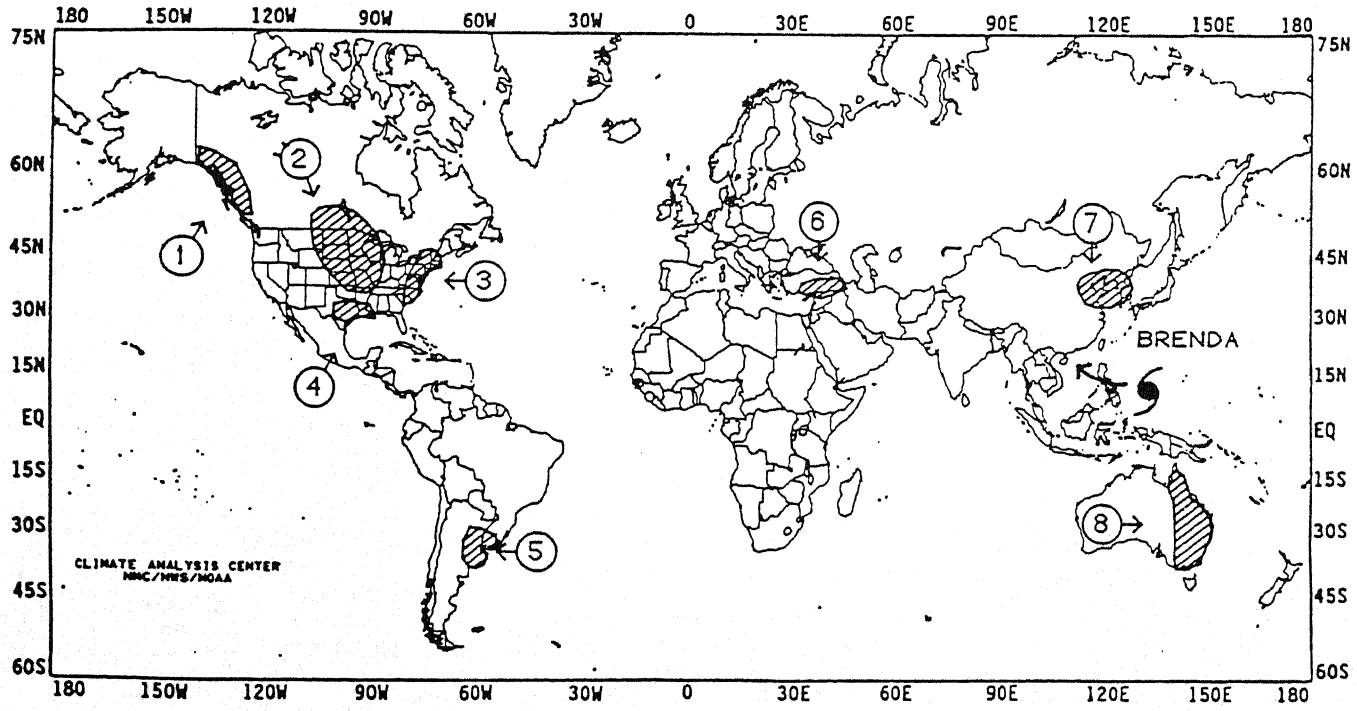
TEMPERATURES RETURN TO NORMAL.

Cooler air brought near normal temperatures to the area and ended a prolonged warm spell [Ended at 12 weeks].

8. Eastern Australia:

WETNESS PERSISTS.

Heavy rains, with amounts approaching 134 mm in Queensland, occurred across much of eastern Australia as very wet weather continued [10 weeks].



EXPLANATION

TEXT: Approximate duration of anomalies is in brackets. Precipitation amounts and temperature departures are this week's values.

MAP: Approximate locations of major anomalies and episodic events are shown. See other maps in this bulletin for current two week temperature anomalies, four week precipitation anomalies, long-term anomalies, and other details.

UNITED STATES WEEKLY CLIMATE HIGHLIGHTS

FOR THE WEEK OF MAY 14 THROUGH MAY 20, 1989.

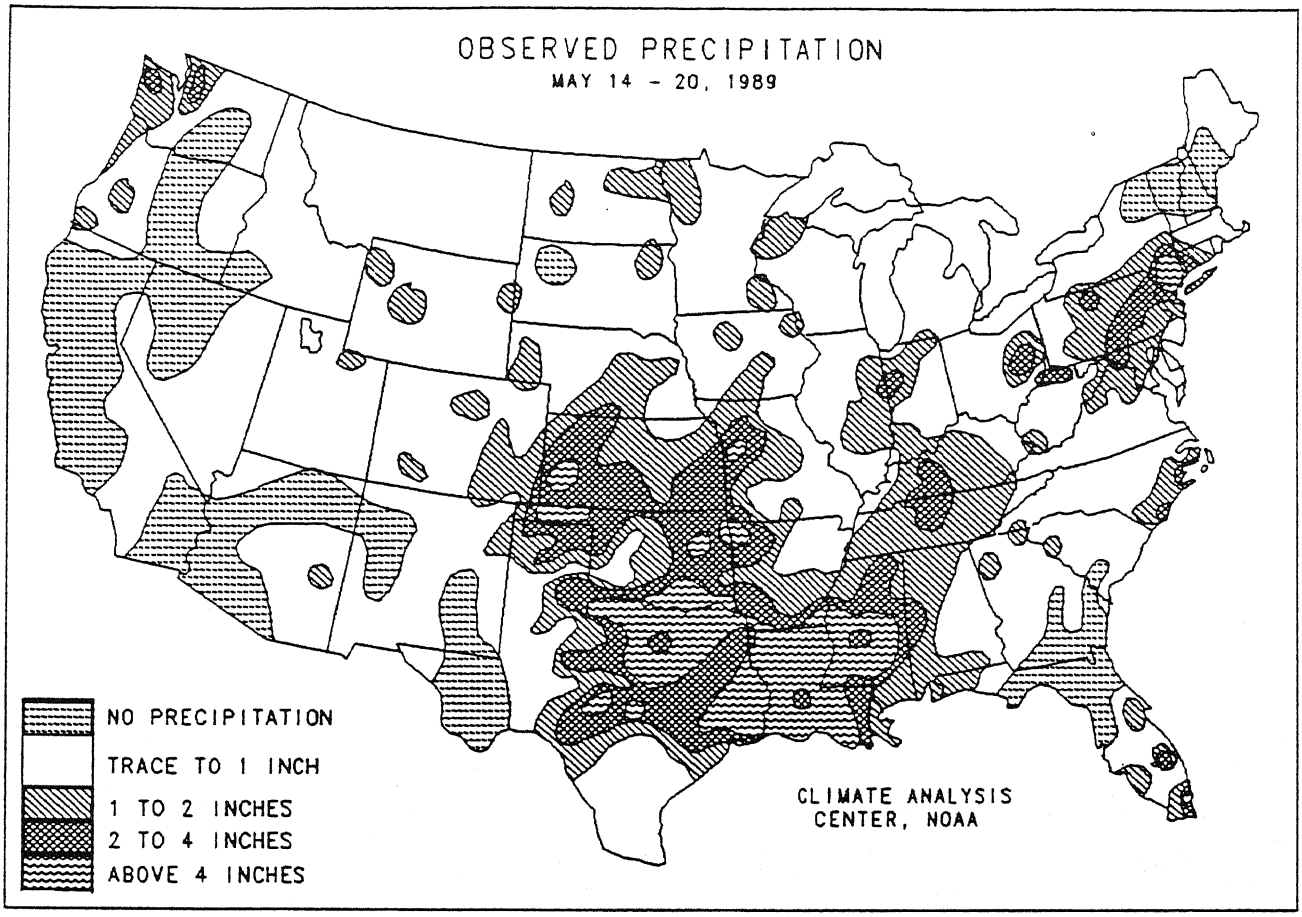
While heavy rains diminished somewhat in the Northeast last week, torrential downpours from slow-moving thunderstorms caused flash flooding in portions of north-central and southeastern Texas and western Louisiana. Severe weather plagued parts of the southern and central Great Plains, Ohio Valley, Carolinas, and southern Florida during the week as dozens of twisters touched down in the state of Texas alone. Early in the week, a developing low pressure center over the eastern Gulf moved northeastward up the Atlantic Coast and then stalled off the New Jersey coast, bringing more wet weather to the mid-Atlantic and New England. In the southern Great Plains, the combination of an upper level disturbance and warm, moist, unstable Gulf air generated strong thunderstorms, including damaging winds, large hail, and tornadoes from central Texas southeastward into western Louisiana. By mid-week, a ridge of high pressure finally brought warmer and drier air to the rain-soaked Northeast as the low pressure center pushed eastward. Severe weather, however, continued across Texas and Louisiana as slow-moving thunderstorms dropped copious rains on many locations. For example, Coushatta, LA received 14.20 inches of rain during a 24-hour period ending Thursday morning. Farther west, a weak cold front produced scattered showers across the Pacific Northwest and northern Rockies. Towards the end of the week, low pressure over the nation's midsection triggered more severe weather, this time in sections of the lower Missouri, middle Mississippi, and Ohio Valleys as more than a dozen tornadoes were spawned in Illinois, Indiana, and Kentucky. These storms, however, dropped beneficial rains on parts of the Corn Belt and central Great Plains (e.g. Kansas City, MO recorded over 2 inches of rain on Thursday, the largest daily amount in nearly 8 months). In abnormally dry southern Florida, Ft. Myers received 7.75 inches on Thursday, which was more rain than had fallen during all of 1989 prior to May 18. Since May 1, many stations in the Northeast have not only exceeded the normal May precipitation, but have also surpassed the total precipitation reported during March and April 1989 combined and have nearly equaled the average total rainfall for May, June, and July. As a result, most reservoir levels are now at or above capacity for this time of the year and water restrictions for metropolitan areas of Philadelphia and New York City have been removed.

According to the River Forecast Centers, extremely heavy rains, up to 17.7 inches, inundated parts of north-central and southeastern Texas and western Louisiana (see front cover and Table 1). Severe flooding was reported around the Houston and Dallas-Ft. Worth metropolitan areas. Farther north, beneficial rains (between 2 and 4 inches) occurred across most of Oklahoma, the western, southern, and eastern sections of Kansas, and western Missouri while lesser amounts (between 1 and 2 inches) were recorded in northern Kansas, most of Nebraska, southern Iowa, and central Illinois and Indiana. In the Northeast, between 2 and 4 inches of rain fell on already-saturated soils and caused some flooding in eastern Pennsylvania, southern New York, and New Jersey. Elsewhere, heavy rains were observed in parts of southern Florida, the Hawaiian Islands, and along the central Gulf and Pacific Northwest Coasts. Light to moderate amounts were reported along the Pacific Northwest Coast, in the northern half of the Rockies, and throughout most of the eastern two-thirds of the country. Little or no precipitation occurred along Alaska's southeastern coast and the southern two-thirds of the Pacific Coast, in most of the Intermountain West and southern Rockies, and in portions of the upper Missouri and Rio Grande Valleys, northern Florida, and central New England.

Temperatures moderated across most of the lower 48 states last week as cooler air invaded the West and warmer weather prevailed in the northern and northeastern U.S. The greatest positive temperature departures (between +8°F and +12°F) were located in the northern Great Plains and upper Midwest, throughout most of the northern Appalachians, and in extreme southern Texas (see Table 2). Highs surpassing 100°F were recorded in the desert Southwest and southwestern Texas while readings in the upper eighties and lower nineties occurred in parts of New England (see Figure 1). Weekly temperatures averaged near to slightly above normal along the Pacific and Gulf Coasts, in the nation's midsection, across the Great Lakes, and in Hawaii and southern Florida. In contrast, temperatures averaged slightly below normal throughout most of the Rockies, the Southeast, and Alaska (see Table 3). Lows dipped below freezing in parts of the Intermountain West and north-central Rockies (see Figure 2).

TABLE 1. Selected stations with 3.00 or more inches of precipitation during the week.

Station	Total(In)	Station	Total(In)
Houston, TX	10.36	Fayetteville, AR	4.05
Baton Rouge, LA	7.95	Ft. Worth/Carswell AFB, TX	3.77
Ft. Myers, FL	7.75	McAlester, OK	3.74
Hilo/Lyman, Hawaii, HI	6.94	Ft. Worth/Meacham, TX	3.66
Port Arthur, TX	6.44	Shreveport, LA	3.56
Lake Charles, LA	5.57	Ft. Smith, AR	3.55
Dallas/Ft. Worth, TX	5.56	Jackson, MS	3.41
Valparaiso/Eglin AFB, FL	5.44	Yakutat, AK	3.36
Shreveport/Barksdale AFB, LA	4.86	Gage, OK	3.35
Homestead AFB, FL	4.84	Milton/Whiting NAS, FL	3.32
Monroe, LA	4.50	Mobile, AL	3.31
Garden City, KS	4.41	Houston/William Hobby, TX	3.14
Waco, TX	4.39	Lufkin, TX	3.11
Meridian, MS	4.20	New York/La Guardia, NY	3.03
Dallas NAS, TX	4.12	Poughkeepsie, NY	3.03


OBSERVED PRECIPITATION
MAY 14 - 20, 1989
NO PRECIPITATION
TRACE TO 1 INCH
1 TO 2 INCHES
2 TO 4 INCHES
ABOVE 4 INCHES
CLIMATE ANALYSIS
CENTER, NOAA

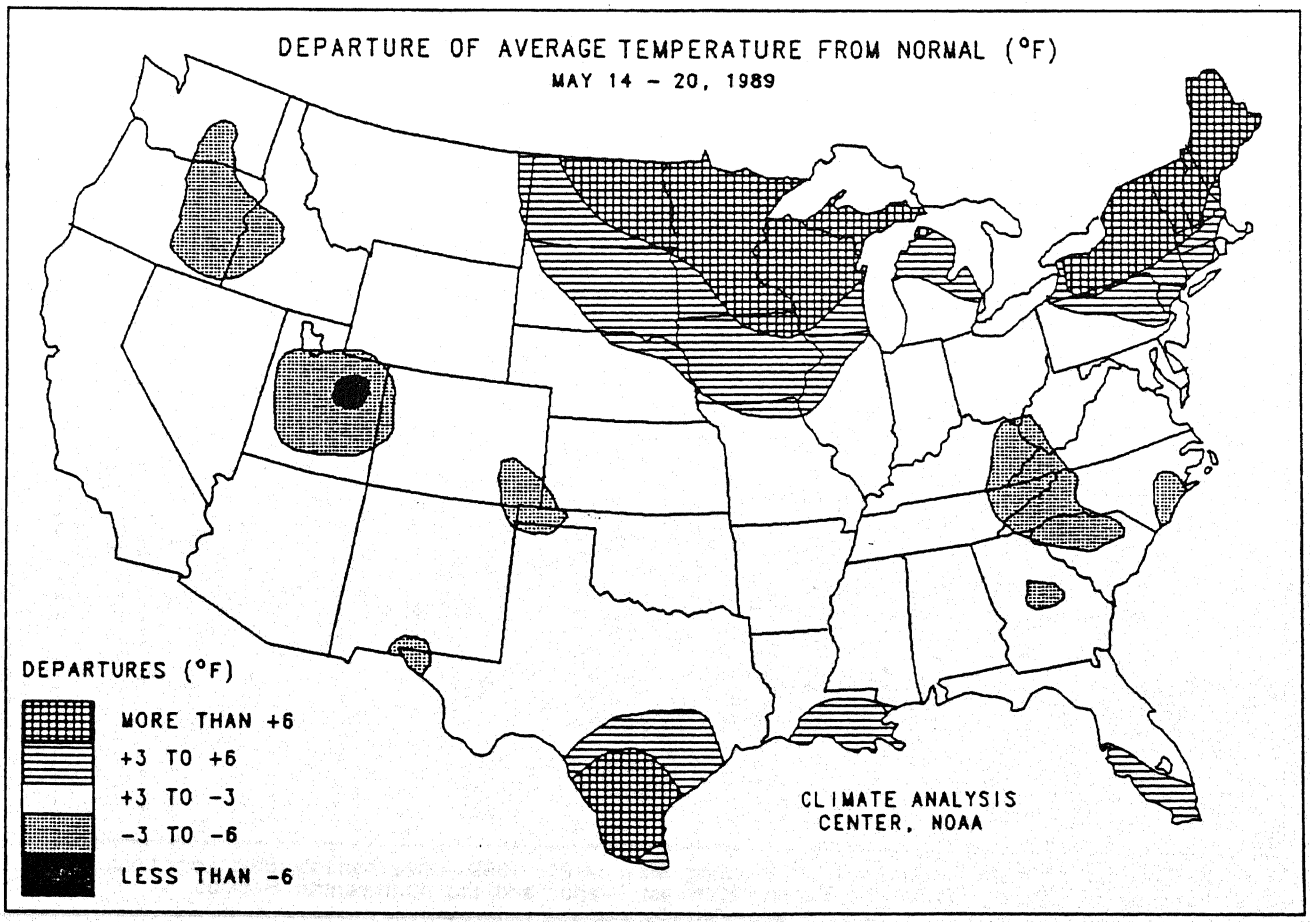

DEPARTURE OF AVERAGE TEMPERATURE FROM NORMAL (°F)
MAY 14 - 20, 1989
DEPARTURES (°F)
MORE THAN +6
+3 TO +6
+3 TO -3
-3 TO -6
LESS THAN -6
CLIMATE ANALYSIS
CENTER, NOAA

TABLE 2. Selected stations with temperatures averaging 8.0°F or more ABOVE normal for the week.

Station	Degrees F Dep.	Avg.	Station	Degrees F Dep.	Avg.
Rumford, ME	+12.0	65.4	Jamestown, ND	+8.9	63.8
Mt. Washington, NH	+12.0	47.0	Fargo, ND	+8.7	64.8
International Falls, MN	+11.9	63.7	Rome/Griffiss AFB, NY	+8.7	64.1
Hancock/Houghton Co., MI	+11.8	61.8	Minot, ND	+8.7	63.0
Burlington, VT	+11.3	67.0	Park Falls, WI	+8.7	62.6
Caribou, ME	+11.0	61.6	Eau Claire, WI	+8.5	65.9
Lebanon, NH	+ 9.8	64.5	Sault Ste. Marie, MI	+8.5	58.6
Montpelier, VT	+ 9.6	63.2	Alexandria, MN	+8.4	64.3
Grand Forks, ND	+ 9.2	64.1	Massena, NY	+8.3	64.3
Pellston, MI	+ 9.2	61.1	Utica, NY	+8.2	64.3
Duluth, MN	+ 9.1	59.5	Bangor, ME	+8.1	61.5
Beeville NAS, TX	+ 8.9	85.9	Marquette, MI	+8.1	58.8

TABLE 3. Selected stations with temperatures averaging 3.5°F or more BELOW normal for the week.

Station	Degrees F Dep.	Avg.	Station	Degrees F Dep.	Avg.
Nome, AK	-6.7	30.0	Pendleton, OR	-3.9	54.9
Bethel, AK	-5.8	35.2	Bettles, AK	-3.8	41.7
Aniak, AK	-5.8	37.4	La Junta, CO	-3.8	59.5
McGrath, AK	-5.1	40.3	Bristol, TN	-3.8	60.8
Delta, UT	-4.9	53.8	Burns, OR	-3.6	48.9
Baker, OR	-4.7	48.2	Great Falls, MT	-3.6	50.2
Unalakleet, AK	-4.3	35.1	Walla Walla, WA	-3.6	57.0
Kotzebue, AK	-4.2	28.6	Wenatchee, WA	-3.6	57.0
Elkhart, KS	-4.1	60.8	Grand Junction, CO	-3.6	58.6
Meacham, OR	-4.0	44.8	El Paso, TX	-3.6	68.9

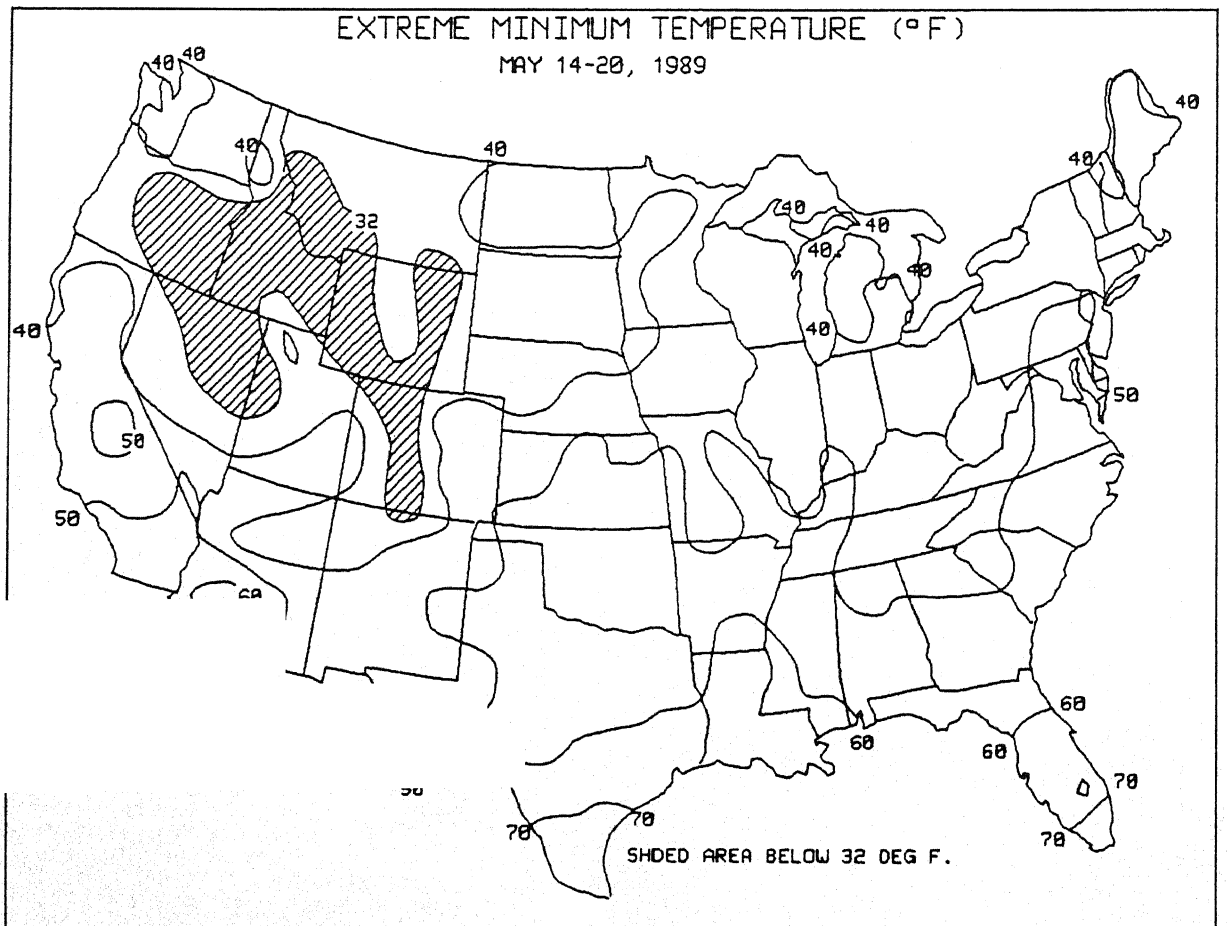


Figure 2. Extreme minimum temperatures (°F) during May 14-20, 1989. Unseasonably cold conditions sent temperatures below freezing across the Pacific Northwest Interior and the north-central Rockies.

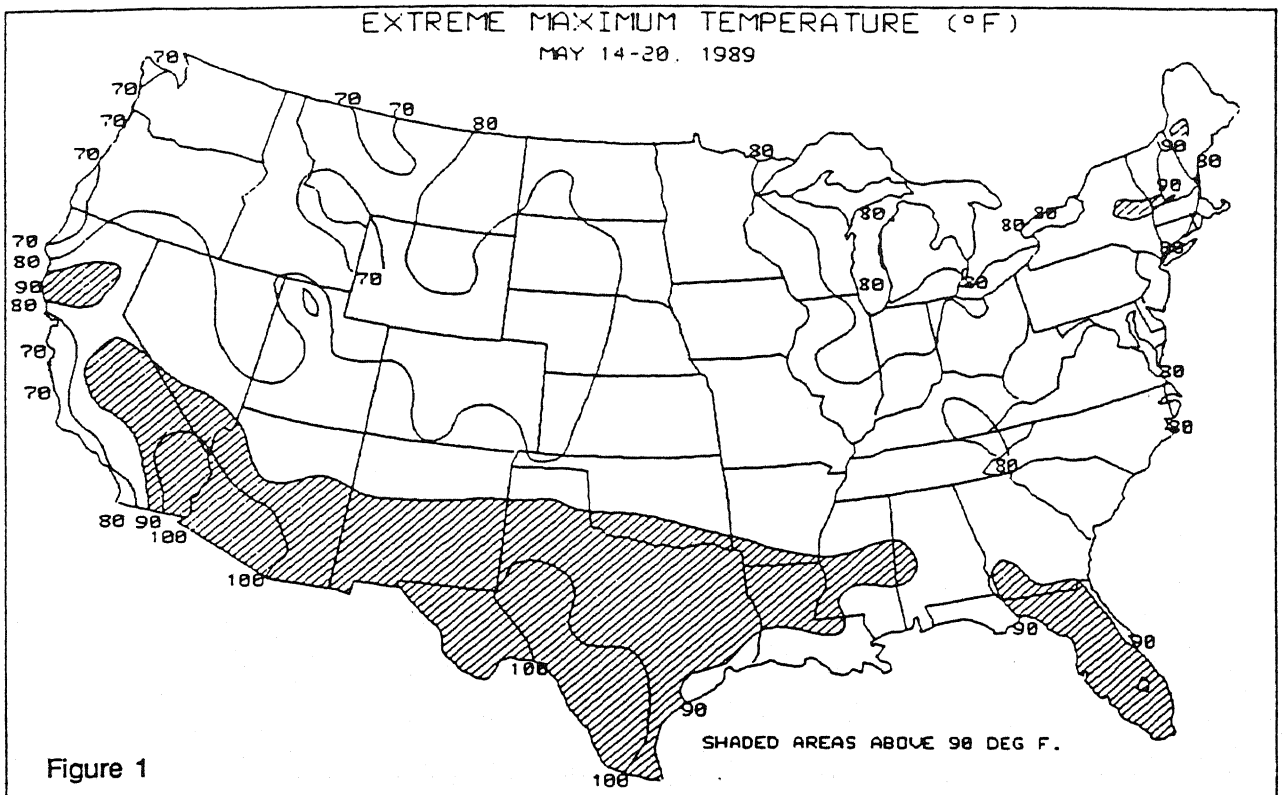
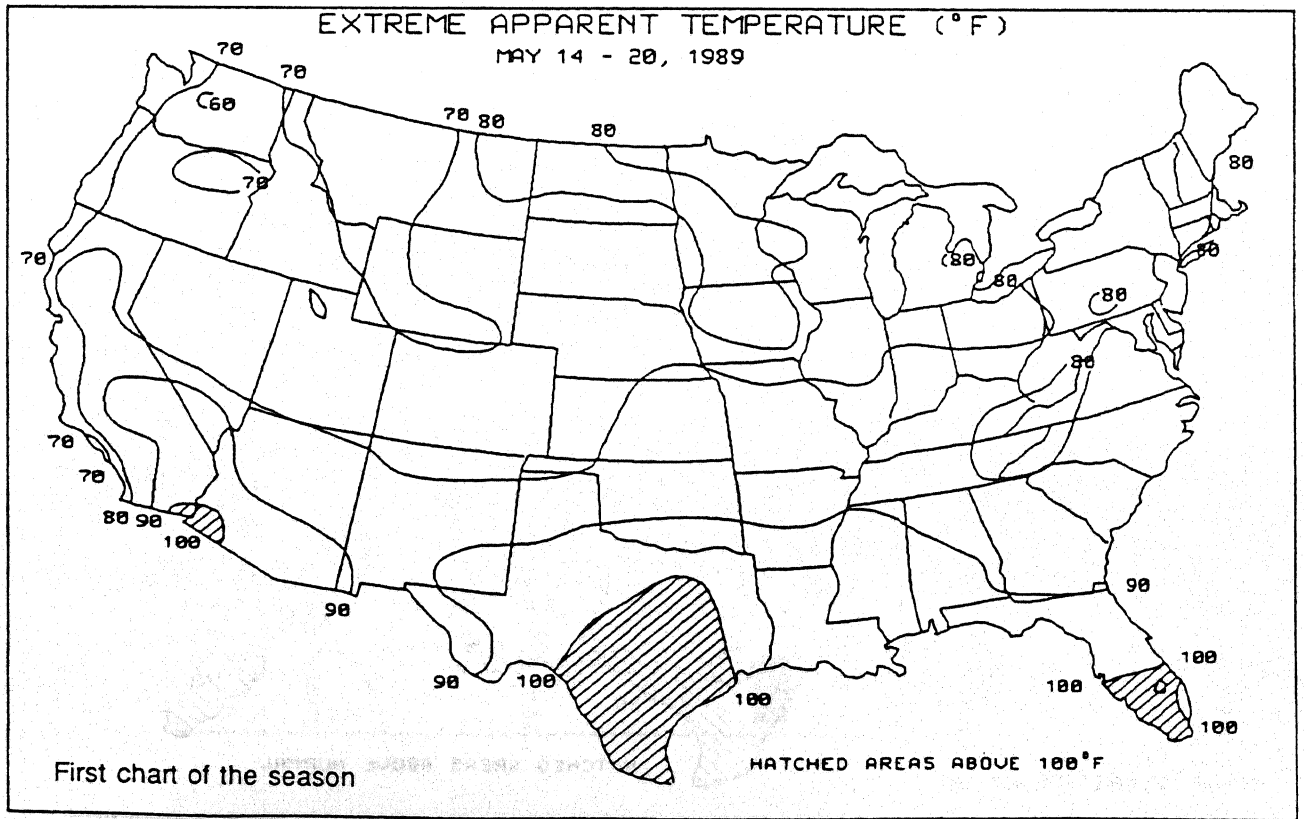
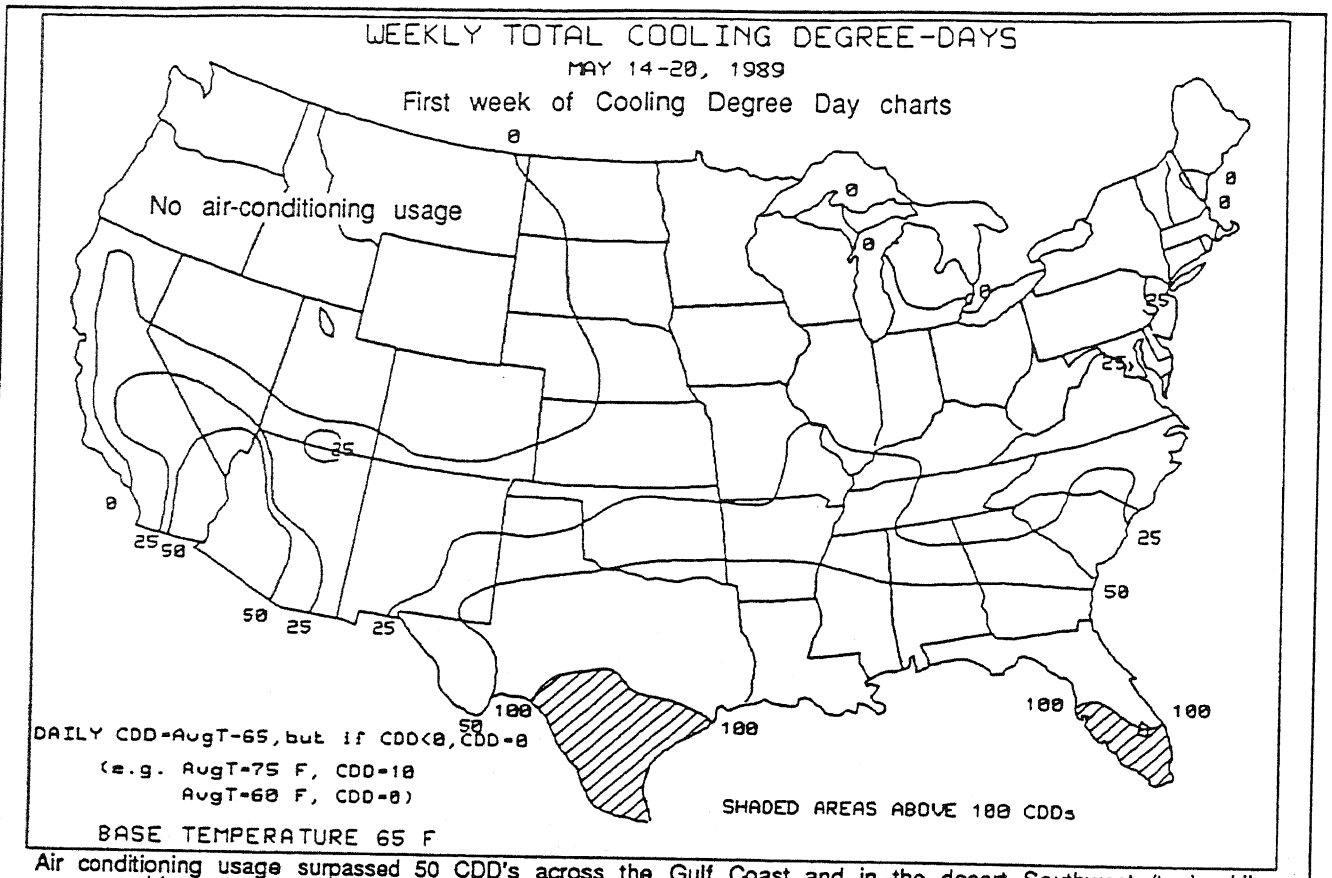


Figure 1

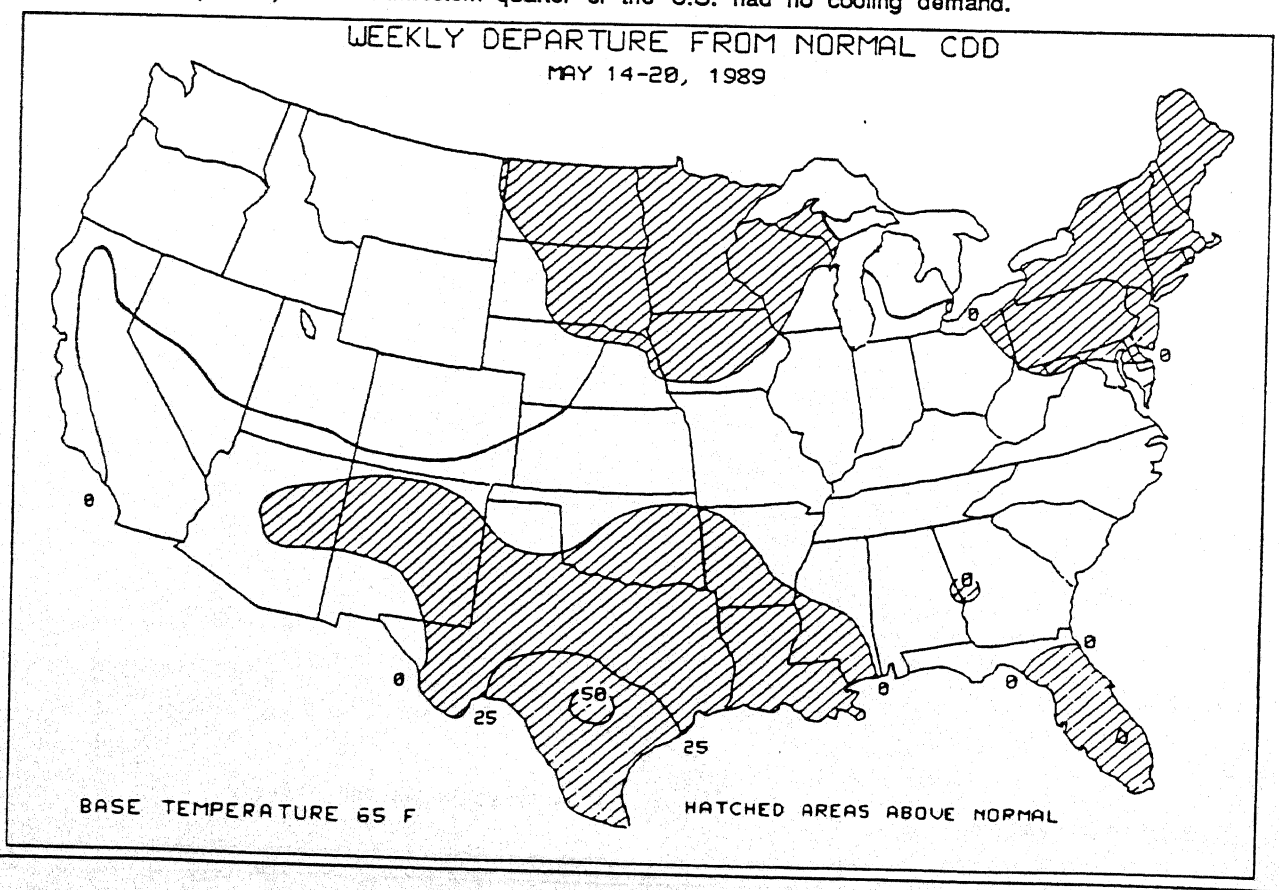
Warmer conditions returned to the Northeast after several weeks of unseasonably cool and wet weather. Highs surpassed 100°F in the desert Southwest and southern Texas while nineties were recorded across the Deep South and in parts of New England (top). Extreme apparent temperatures approached 105°F (dangerous category) in southern Texas and Florida (bottom). See the Weekly Climate Bulletin #89/18, page 8 for explanation on apparent temperatures.



First chart of the season

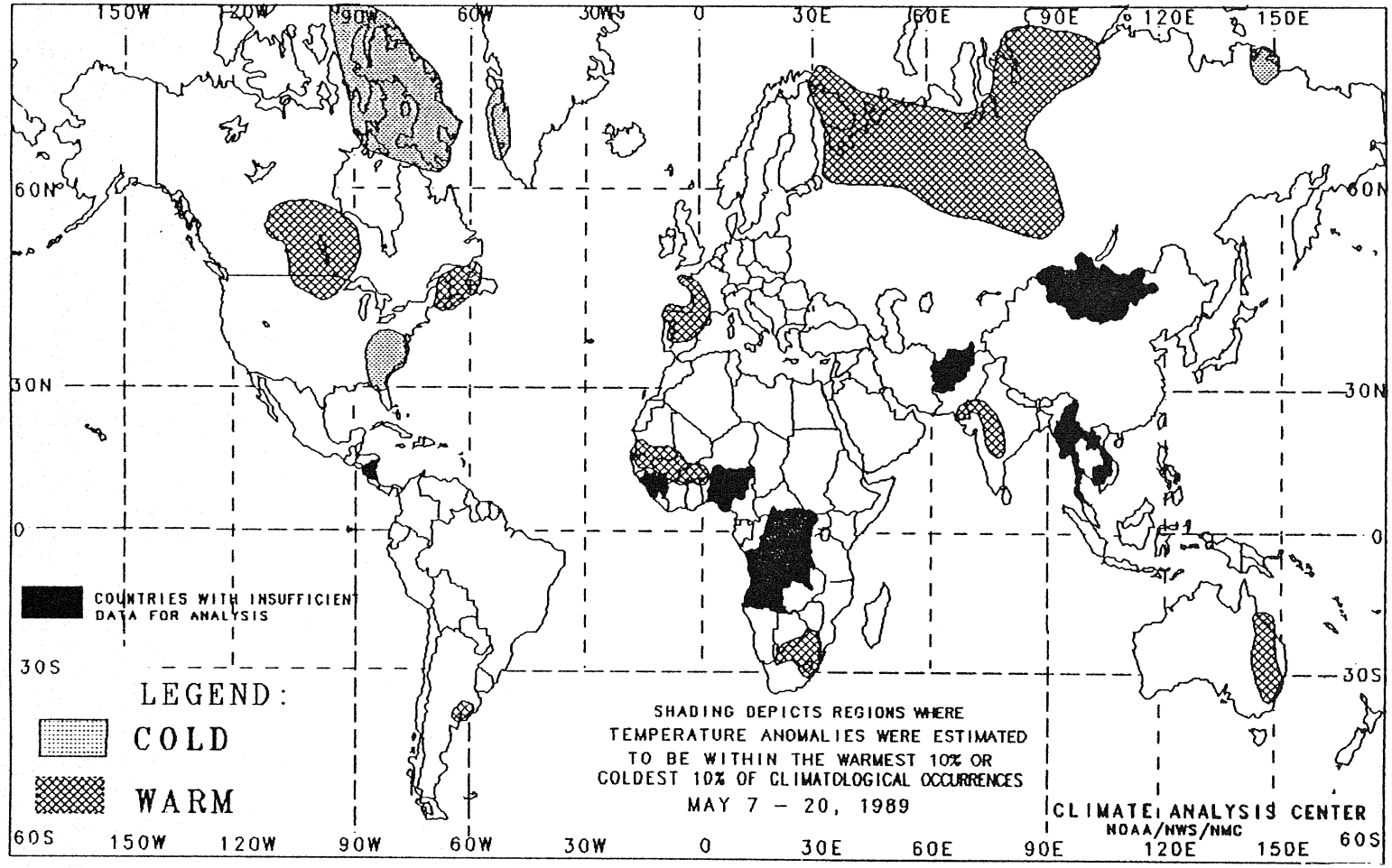


Air conditioning usage surpassed 50 CDD's across the Gulf Coast and in the desert Southwest (top) while unseasonably warm weather required above normal cooling in the southern Great Plains, upper Midwest, and New England (bottom). The northwestern quarter of the U.S. had no cooling demand.



GLOBAL TEMPERATURE ANOMALIES

2 WEEKS



The anomalies on this chart are based on approximately 2500 observing stations for which at least 13 days of temperature observations were received from synoptic reports. Many stations do not operate on a twenty-four hour basis so many night time observations are not taken. As a result of these missing observations the estimated minimum temperature may have a warm bias. This in turn may have resulted in an overestimation of the extent of some warm anomalies.

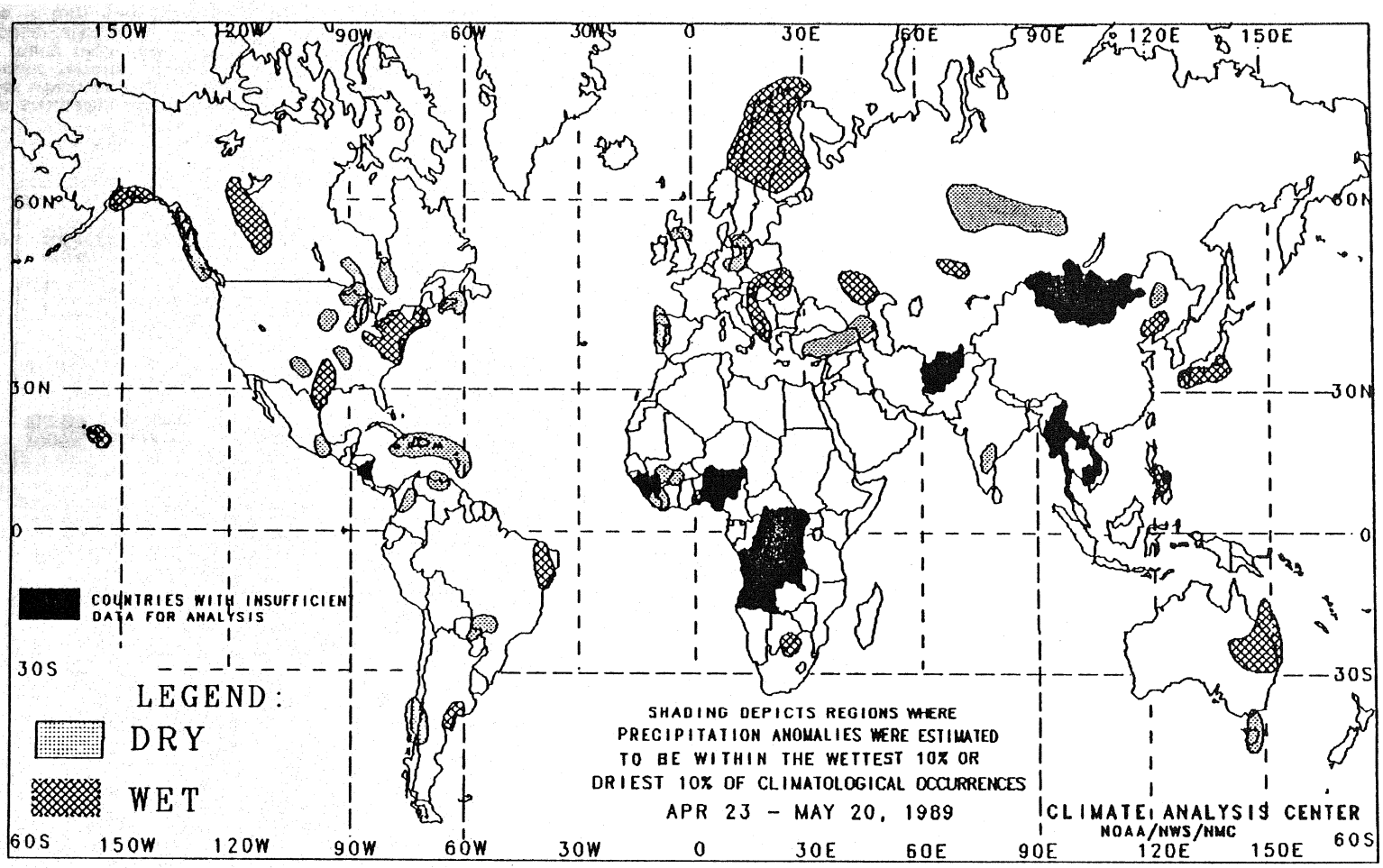
Temperature anomalies are not depicted unless the magnitute of temperature departures from normal exceeds 1.5°C.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

This chart shows general areas of two week temperature anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

GLOBAL PRECIPITATION ANOMALIES

4 WEEKS



The anomalies on this chart are based on approximately 2500 observing stations for which at least 27 days of precipitation observations (including zero amounts) were recieved or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

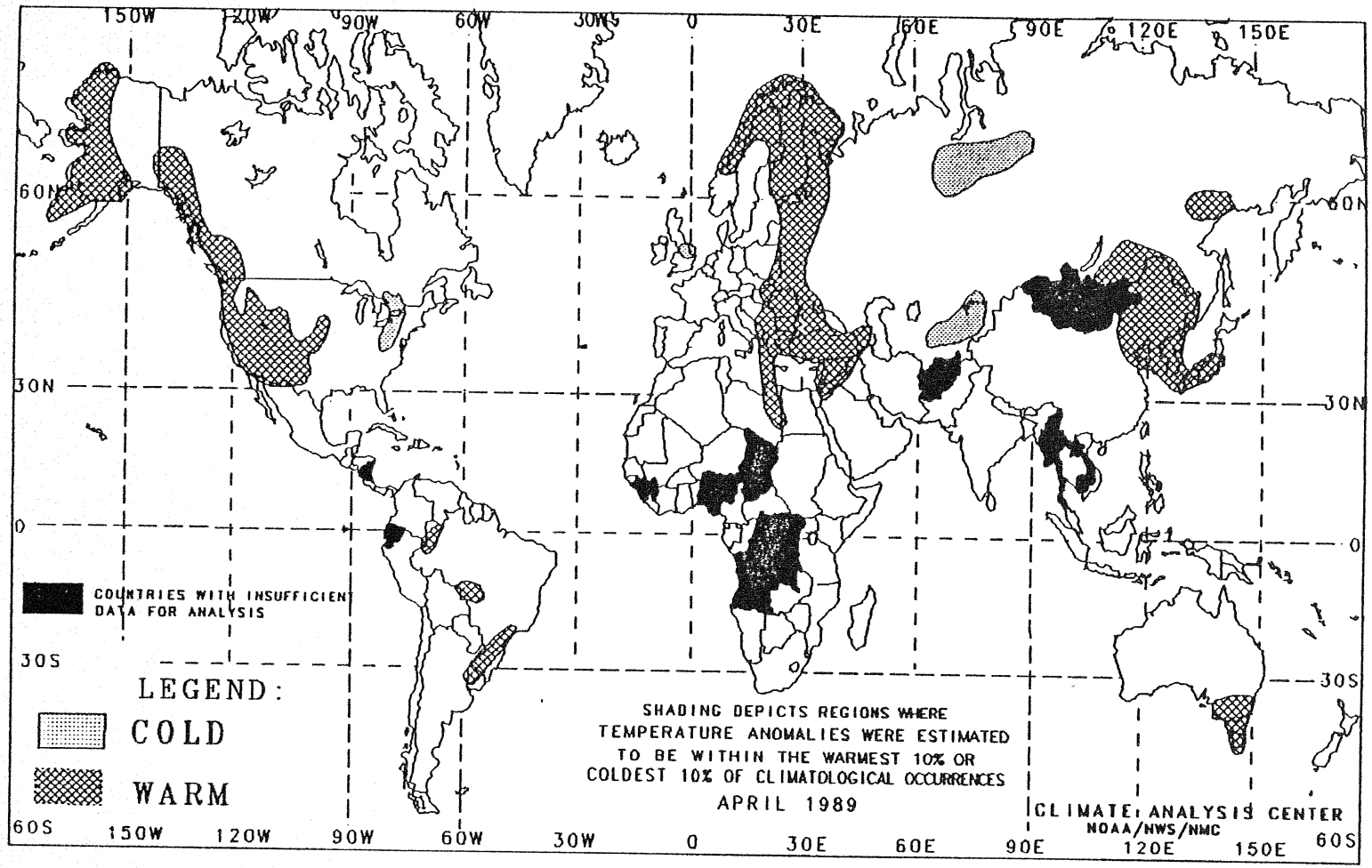
In climatologically arid regions where normal precipitation for the four week period is less than 20 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total four week precipitation exceeds 50 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South Africa, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of four week predipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

GLOBAL TEMPERATURE ANOMALIES

1 MONTH



The anomalies on this chart are based on approximately 2500 observing stations for which at least 26 days of temperature observations were received from synoptic reports. Many stations do not operate on a twenty-four hour basis so many night time observations are not taken. As a result of these missing observations the estimated minimum temperature may have a warm bias. This in turn may have resulted in an overestimation of the extent of some warm anomalies.

Temperature anomalies are not depicted unless the magnitute of temperature departures from normal exceeds 1.5^{0}C.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

This chart shows general areas of one month temperature anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

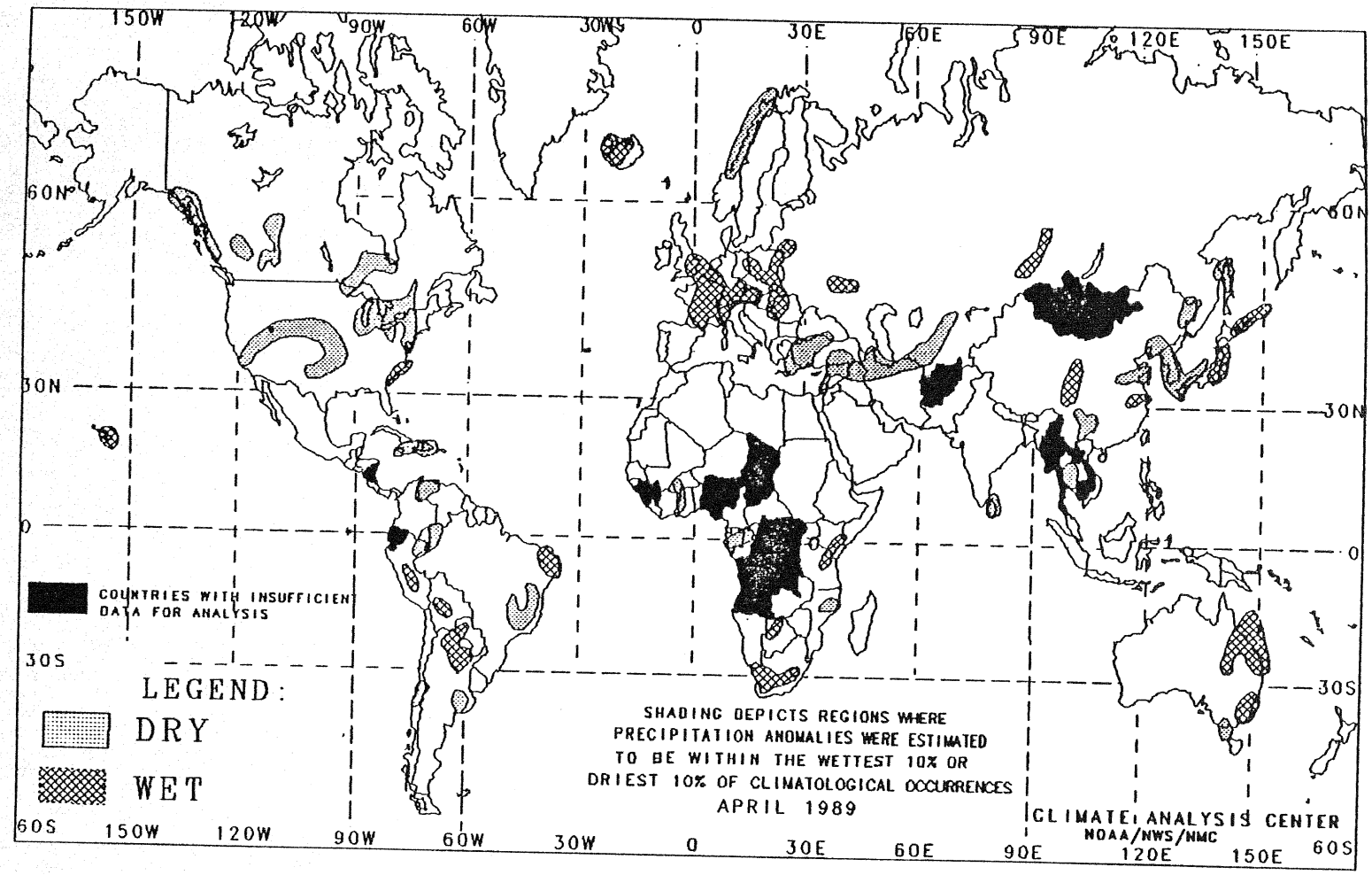
PRINCIPAL TEMPERATURE ANOMALIES

APRIL 1989

REGIONS AFFECTED	TEMPERATURE AVERAGE (C)	DEPARTURE FROM NORMAL (C)	COMMENTS
NORTH AMERICA			
Western Alaska	-15 to +1	+2 to +5	MILD - 2 to 10 weeks
Western United States, Western Canada, and adjacent Alaska	+2 to +27	+2 to +7	WARM - 2 to 14 weeks
Southeastern Ontario and Western New York	+1 to +6	Around -2	COLD - 2 to 5 weeks
SOUTH AMERICA AND EASTERN PACIFIC			
Northwestern Brazil	+26 to +27	+2 to +3	Very warm second half of April
West Central Brazil	+24 to +28	+2 to +4	WARM - 5 weeks
Southern Brazil and Northern Uruguay	+19 to +22	+2 to +3	WARM - 6 weeks
EUROPE AND THE MIDDLE EAST			
England	Around +6	-2 to -3	Very cold second half of April
Eastern Europe and the Middle East	-1 to +27	+2 to +6	WARM - 5 to 25 weeks
AFRICA			
Eastern Libya	+22 to +27	+2 to +3	WARM - 2 weeks
ASIA			
Kazakh S.S.R.	+6 to +13	-2 to -3	COLD - 2 to 5 weeks
Northwestern Siberia	-13 to -6	-4 to -6	COLD - 2 to 6 weeks
Southeastern Siberia	Around -3	+2 to +3	Very warm in early April
East Central Asia	0 to +17	+2 to +7	MILD - 6 to 34 weeks
AUSTRALIA AND WESTERN PACIFIC			
Southeastern Australia	+15 to +18	+2 to +3	WARM - 2 weeks

GLOBAL PRECIPITATION ANOMALIES

1 MONTH



The anomalies on this chart are based on approximately 2500 observing stations for which at least 27 days of precipitation observations (including zero amounts) were recieved or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

In climatologically arid regions where normal precipitation for the one month period is less than 20 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total one month precipitation exceeds 50 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South Africa, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of one month precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

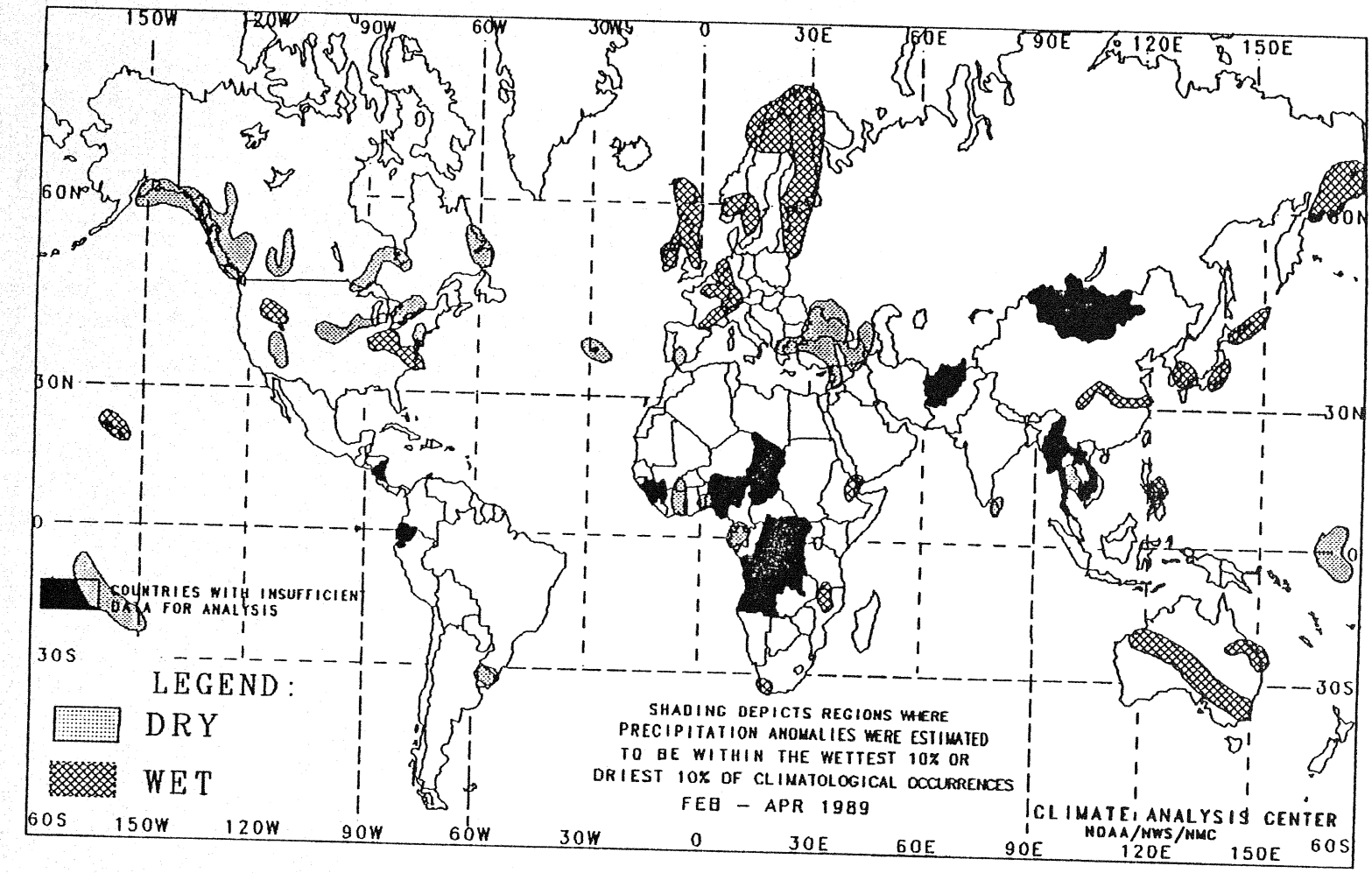
PRINCIPAL PRECIPITATION ANOMALIES

APRIL 1989

REGIONS AFFECTED	PRECIPITATION TOTAL (MM)	PERCENT OF NORMAL	COMMENTS
NORTH AMERICA			
Southeastern Alaska and Western British Columbia	22 to 84	19 to 33	DRY - 4 to 23 weeks
Southern Alberta	0 to 20	0 to 51	DRY - 4 to 23 weeks
Central Saskatchewan	2 to 12	8 to 24	DRY - 5 to 23 weeks
Western Ontario and Northeastern Minnesota	0 to 14	0 to 35	DRY - 5 to 16 weeks
Northeastern United States and Southeastern Ontario	12 to 70	18 to 61	DRY - 4 to 5 weeks
Carolina Coast	123 to 236	164 to 290	Heavy precipitation first half of April
Southwestern and Central United States	0 to 17	0 to 39	DRY - 4 to 10 weeks
Hawaii	364 to 945	284 to 1341	WET - 6 to 10 weeks
Jamaica and Dominican Republic	5 to 35	6 to 56	DRY - 8 to 10 weeks
SOUTH AMERICA AND EASTERN PACIFIC			
Venezuela	3 to 30	5 to 26	DRY - 4 to 8 weeks
Northeastern Peru and Northwestern Brazil	145 to 163	50 to 56	DRY - 4 weeks
Central Peru	230 to 516	172 to 793	Heavy precipitation in early April
West Central Bolivia	55 to 69	190 to 497	WET - 2 to 9 weeks
East Central Brazil	1 to 65	1 to 59	DRY - 7 weeks
Extreme Eastern Brazil	295 to 559	162 to 199	Heavy precipitation first half of April
Northern Argentina and Western Paraguay	58 to 293	171 to 295	WET - 2 to 6 weeks
Central Chile	0 to 3	0 to 4	DRY - 10 weeks
East Central Argentina	0 to 9	0 to 11	DRY - 5 to 10 weeks
EUROPE AND THE MIDDLE EAST			
Iceland	62 to 107	139 to 206	WET - 4 to 8 weeks
Norway	15 to 54	13 to 65	DRY - 4 to 10 weeks
West Central Europe	42 to 546	137 to 373	WET - 4 to 14 weeks
East Central Europe	21 to 104	133 to 219	WET - 2 to 4 weeks
Northern Ukraine	45 to 62	183 to 203	WET - 4 weeks
Greece and Northwestern Turkey	0 to 25	0 to 40	DRY - 5 to 10 weeks
Southeastern Turkey and the Middle East	0 to 14	0 to 22	DRY - 5 to 10 weeks
AFRICA			
Ivory Coast and adjacent Burkina Faso	5 to 70	10 to 53	DRY - 4 to 10 weeks
Gabon and Congo	60 to 87	27 to 38	DRY - 5 to 15 weeks
Kenya and Tanzania	123 to 274	123 to 360	WET - 4 to 10 weeks
Malawi and Mozambique	4 to 34	10 to 35	DRY - 6 to 10 weeks
Botswana	85 to 97	223 to 340	WET - 7 weeks
South Africa	33 to 143	150 to 500	WET - 2 to 10 weeks
ASIA			
Iran and adjacent Soviet Union	0 to 16	0 to 34	DRY - 7 to 8 weeks
Southwestern Siberia	49 to 118	175 to 323	WET - 10 weeks
Southeastern Siberia	7 to 10	23 to 32	DRY - 10 weeks
Kuril Islands and Hokkaido, Japan	83 to 260	165 to 338	WET - 4 to 8 weeks
Eastern Manchuria	2 to 22	9 to 46	DRY - 10 weeks
Central Japan	118 to 232	125 to 268	WET - 4 to 8 weeks
Southeastern Manchuria, Korea, and Western Japan	5 to 136	15 to 60	DRY - 4 to 9 weeks
Vicinity of Beijing, China	0 to 14	0 to 33	DRY - 5 to 9 weeks
East Central China	124 to 279	131 to 259	WET - 4 to 8 weeks
South Central China	3 to 54	12 to 56	DRY - 4 to 6 weeks
Central China	23 to 132	181 to 798	WET - 7 weeks
Sri Lanka	29 to 68	32 to 50	DRY - 7 weeks
Thailand	1 to 41	3 to 34	DRY - 6 to 10 weeks
AUSTRALIA AND WESTERN PACIFIC			
Northeastern Australia	51 to 521	286 to 738	WET - 5 to 10 weeks
Southeastern Australia	187 to 495	385 to 693	WET - 4 to 11 weeks
Western Victoria	23 to 28	28 to 32	DRY - 4 to 7 weeks

GLOBAL PRECIPITATION ANOMALIES

3 MONTHS

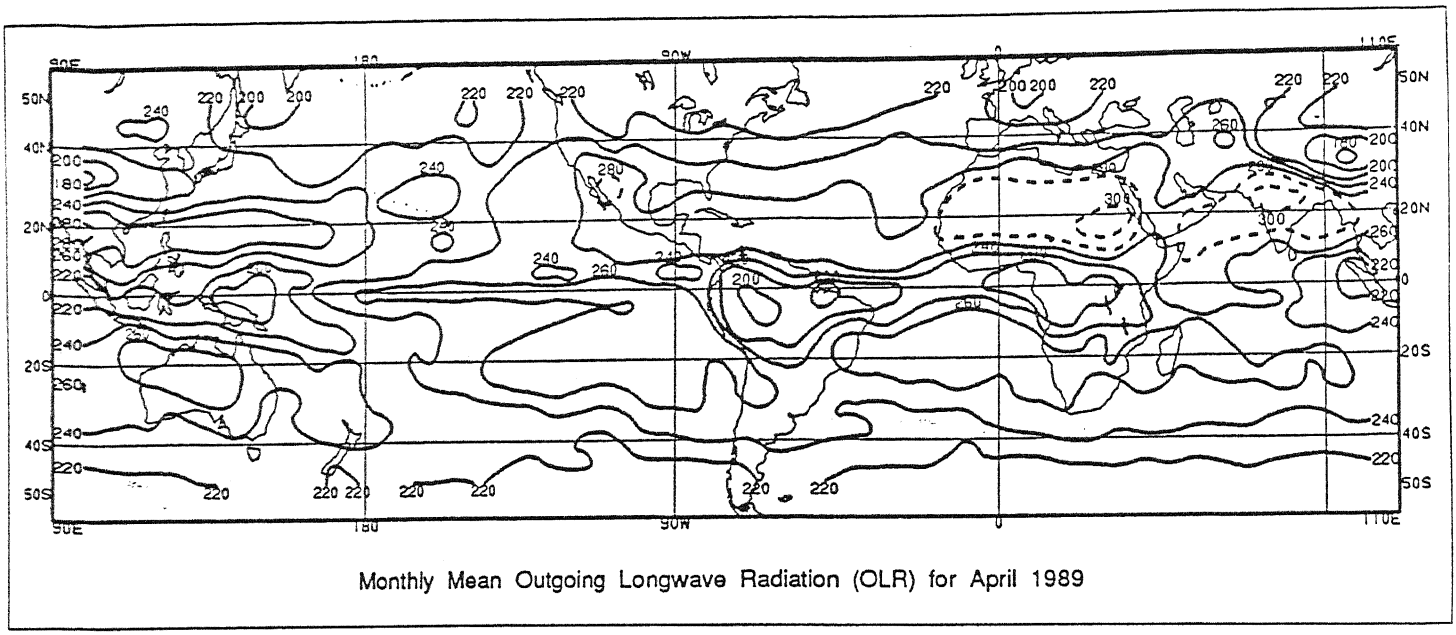


The anomalies on this chart are based on approximately 2500 observing stations for which at least 81 days of precipitation observations (including zero amounts) were recieved or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

In climatologically arid regions where normal precipitation for the three month period is less than 50 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total three month precipitation exceeds 125 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South Africa, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of three month precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

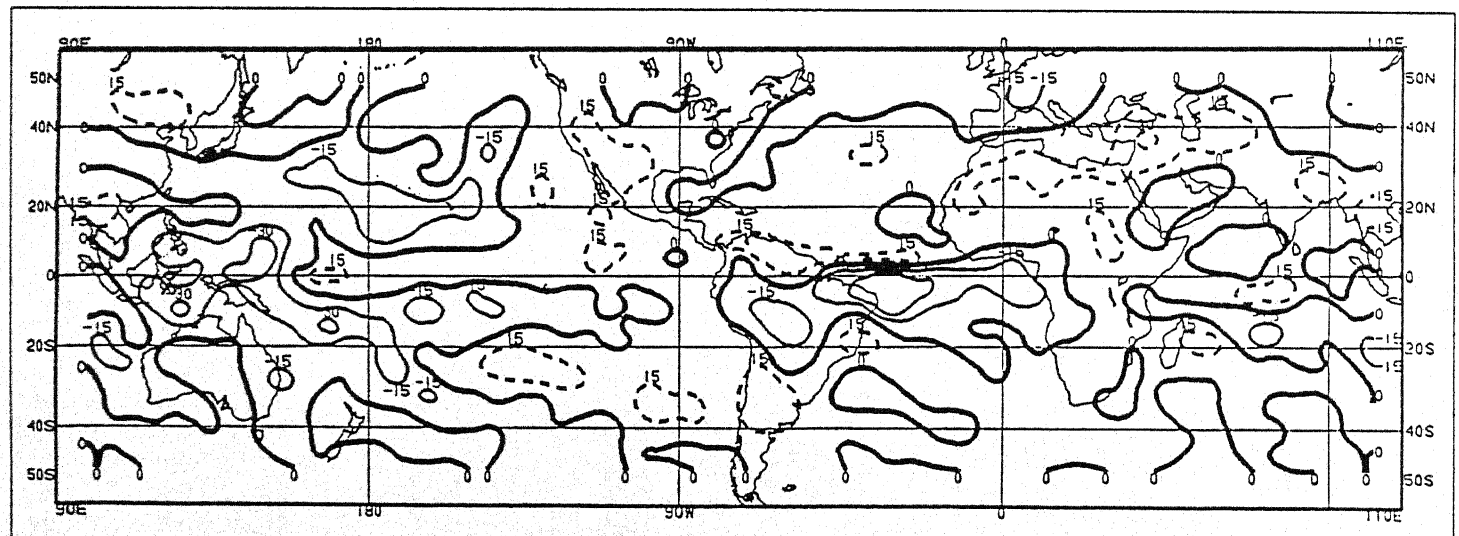


Monthly Mean Outgoing Longwave Radiation (OLR) for April 1989

EXPLANATION

The mean monthly outgoing long wave radiation (OLR) as measured by the NOAA-9 AVHRR IR window channel by NESDIS/SRL (top). Data are accumulated and averaged over 2.5° areas to a 5° mercator grid for display. Contour intervals are 20 Wm^{-2}, and contours of 280 Wm^{-2} and above are dashed. In tropical areas (for our purposes 20°N-20°S) that recieve primarily convective rainfall, a mean OLR value of less than 220 Wm^{-2} is associated with significant monthly precipitation, whereas a value greater than 260 Wm^{-2} normally indicates little or no precipitation. Care must be used in interpreting this chart at higher latitudes, where much of the precipitation is non-convective, or in some tropical coastal or island locations, where the precipitation is primarily orographically induced. The approximate relationship between mean OLR and precipitation amount does not necessarily hold in such locations.

The mean monthly outgoing long wave radiation anomalies (bottom) are computed as departures from the 1974-1983 base period mean (1978 missing). Contour intervals are 15 Wm^{-2}, while positive anomalies (greater than normal OLR, suggesting less than normal cloud cover and/or precipitation) are dashed and negative anomalies (less than normal OLR, suggesting greater than normal cloud cover and/ or precipitation) are solid.



Monthly Mean Outgoing Longwave Radiation (OLR) Anomaly for April 1989